



Mindfulness-Based Interventions with Cancer Patients

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Acknowledgements

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- Canadian Breast Cancer Research Alliance
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- Alternative Cancer Research Foundation



The cartoon depicts a seminar titled "HAPPINESS THROUGH MEDITATION". A sign on the wall also says "HAPPINESS THROUGH MEDICATION". A character enters and says, "OH... THAT WAS A TYPO". Another character responds, "I TOLD YOU WE SHOULD'VE GONE TO THE MOVIES INSTEAD OF PURSUING HAPPINESS."

Outline

- Mindfulness programs for cancer patients
 - Why mindfulness?
 - Psychological Outcomes
 - Psychoneuroimmunology (PNI) outcomes
 - Health Behavior outcomes
- Future Directions
 - Methodological issues
 - Research directions
 - Ongoing work

Why Mindfulness?

- Common issues in cancer:
 - Stress/distress
 - Coping with treatment
 - Symptom control (pain, nausea, fatigue)
 - Loss of control
 - Uncertainty/ fear of recurrence
 - Illness identity
 - Death and dying

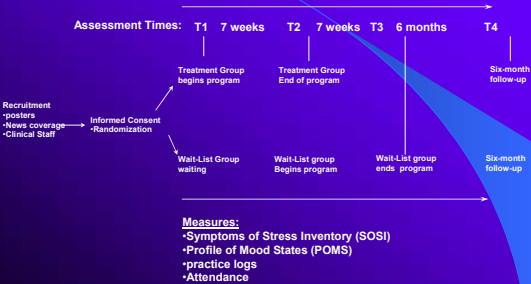
Psychological Outcomes

- Speca, M., Carlson, L.E., Goodey, E., Angen, M.J. (2000). A Randomized Wait-List Controlled Clinical Trial: The Effect of a Mindfulness Meditation Based Stress Reduction Program on Mood and Symptoms of Stress in Cancer Outpatients. *Psychosomatic Medicine*, 62, 613-622.
- Carlson, L.E., Ursuliak, Z., Goodey, E., Angen, M., Speca, M. (2001) The Effects of a Mindfulness Meditation Based Stress Reduction Program on Mood and Symptoms of Stress in Cancer Outpatients: Six-month follow-up. *Supportive Care in Cancer*, 9(2), 112-123.

Program Design

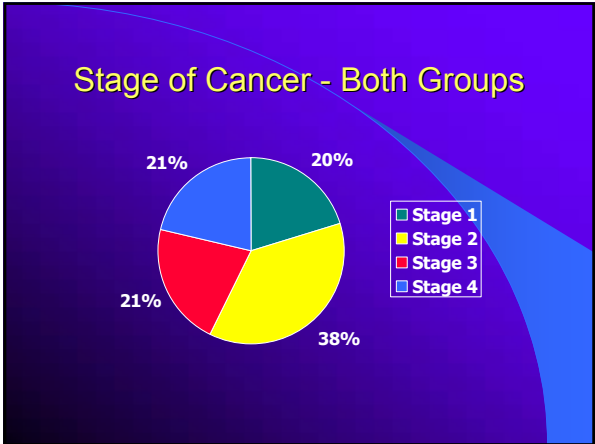
- 7-week/ 8-week intervention
- Structure:
 - 1.5 hour weekly meetings with 2 instructors
 - Discussion followed by mindful yoga and meditation
 - Follow booklet which outlines the program/ includes a bibliography
 - Homework log of time spent in meditation
 - Daily meditation practice encouraged-formal and informal (tape provided)
 - 3 hour Saturday silent retreat

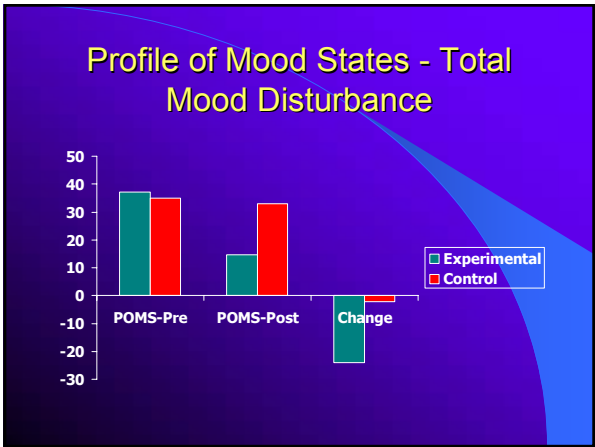
Study Design

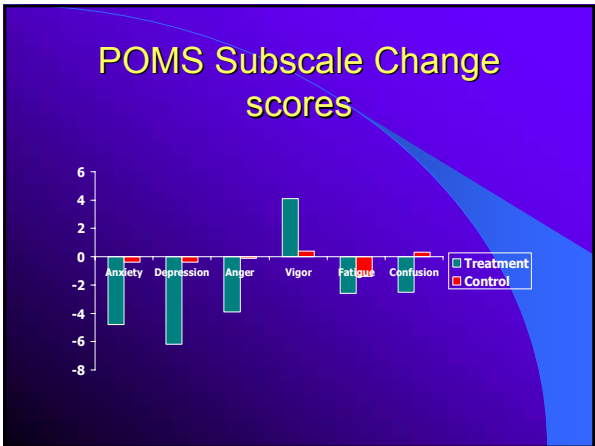


Patient Characteristics

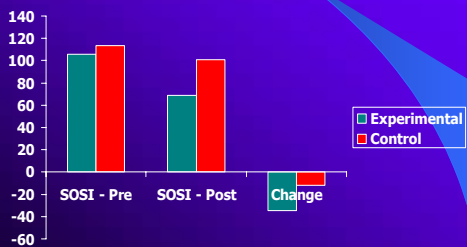
	N	Male	Female	Age (years)	Education (years)
Treatment	53	7	46	54.9	15.7
Control	37	10	27	48.5	15.0
Total	90	17	73		



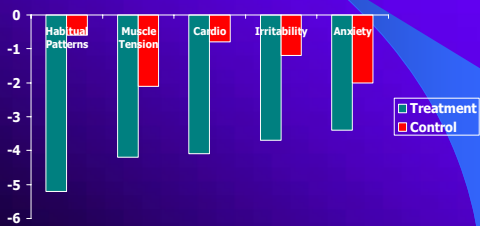




Symptoms of Stress Inventory - Total Symptom Score



SOSI Subscale Change Scores



Qualitative/Mixed Methods

- Good for investigating areas where no questionnaires are developed / more esoteric outcomes / process
- Other research:
 - Brennan and Stevens (Meditation and cancer)
Australian J Holistic Nursing, 1998, 5(2), 20-26.

Grounded Theory Study

- Interviewed long-term MBSR participants
- 7 females and 2 males
- 43-77 years in age (average age 60.8 years).
- Active in the drop-in group for between 1 and 6 years (average time 2.8 years).
- Individual interviews followed by focus group
- Data analyzed using Q6 Nudist and grounded theory approach

Themes - I

- Self-Regulation
 - Provides tools for coping with stress
 - Internal versus external control
 - Participation in one's own recovery
 - Practice creates less reactive response set
 - Regular life as impediment to practice
 - Means of re-familiarizing self with body

"Meditation gives me time to look within. By looking within, that gives me control. I'm deciding to take that breath, to focus on my breathing and direct that breath or energy."



Themes - II

- Transformation
 - Means of looking inward
 - Change of perspective
 - Lessening of cancer as part of identity
 - Creation of new path
 - Feelings of gratitude
 - Accepting versus fighting with illness
 - Practice as spirituality
 - Hope as key



"Meditation has given me the opportunity to be in touch with those parts of myself that are still unknown."

Themes - III

● Collective Learning

- Mechanism for practice
- Validation of one's experience
- Process of discovery
- Refinement of tools
- Need to continue practice after 8-week group



"There seems to be a greater energy when a group of people come together and meditate."

Themes - IV

● Group Dynamics

- Friendship
- Motivation / encouragement to continue practice
- Sharing in common experience
- Support inside versus outside of group
- Meditation as collective experience
- Group provides unique understanding of fellow participant's lives



"You don't realize how beneficial it is to be able to talk about your experience. This is really a positive thing. It's part of the process for me, allowing myself to heal."

Tea Ceremony
Shaun Hunter (December 2003)

*They serve tea at the cancer centre
In fine china cups
With scalloped edges
And delicate pink flowers
Like the cups your grandmother used
Long ago
When you were just
Starting out
On your life*

*This long dark hallway of cancer
Feels like the end
Of everything
You wait
Keep your eyes down
Tuck into the ache of your self
Wrap your body
In the cold comfort
Of fear*

*You will hear the tea trolley before
You see it
The fine gentle music
Of tea cups and silver spoons
Rattling on saucers*

*Take the offered cup
Taste the tea as if
For the first time*

This is your new life

Drink it in

Other programs – Psychological Outcomes

- Bauer-Wu and Rosenbaum. *Psycho-onc*, 13(S1), S10-11.
- Dana-Farber CI, Boston
- Individualized MBSR for 18 BMT patients during hospitalization
- Found that patients felt more relaxed, happy, and comfortable, had less pain after each session compared to before
- Decreased HR and breathing rate

Other Programs – Psychological Outcomes

- Moscoso et al, *Psycho-onc*, 12(S1), S12.
- Morton Plant CC, Clearwater, FL
- Nonrandomized groups, 17 pts. Each
- 4-session abbreviated MBSR
- Greater reduction in anxiety in intervention compared to control grp
- Planning an RCT (funded?)

Other Programs – Psychological Outcomes

- MB Art-therapy – Caroline Peterson at Thomas Jefferson University
- Combines art therapy, group support and MBSR
- A recently completed a two-year RCT (N=111) compared the eight-week MBAT intervention to wait list control in a heterogeneous cohort of women with mixed cancer types receiving usual oncologic care.

MBAT Psychological Results

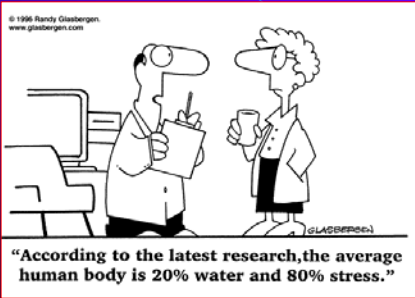
MBAT R-21
SCL-90 Summary Table (N = 111)

Change Scores Pre- Post		Adjusted Mean Score x (square root scale)		
SCL-90-R FACTOR	Control	MBAT	Effect (C- MBAT)	p
Global Severity	-0.04	-0.20	0.16	<0.001
Anxiety	-0.10	-0.26	0.16	0.022
Depression	-0.08	-0.27	0.19	0.001
Somatization	0.01	-0.19	0.20	0.001
Hostility	-0.03	-0.18	0.16	0.007
IS	-0.02	-0.17	0.15	0.012
O-C	-0.05	-0.18	0.13	0.012
Additional Items	0.00	-0.26	0.26	<0.001

Immune and Endocrine Outcomes

- Carlson, L.E., Speca, M., Patel, K.D., Goodey, E. Mindfulness-Based Stress Reduction in Relation to Quality of Life, Mood, Symptoms of Stress and Immune Parameters in Breast and Prostate Cancer Outpatients. *Psychosomatic Medicine*, 64(4), 571-581.
- Carlson, L.E., Speca, M., Patel, K.D., Goodey, E. Mindfulness-Based Stress Reduction in Relation to Quality of Life, Mood, Symptoms of Stress and Levels of Cortisol, Dehydroepiandrosterone-Sulfate (DHEAS) and Melatonin in Breast and Prostate Cancer Outpatients. *Psychoneuroendocrinology*, 29, 448-474.
- Carlson, L.E., Speca, M., Goodey, E. Mindfulness-Based Stress Reduction in Relation to Systolic and Diastolic Blood Pressure in Breast and Prostate Cancer Outpatients: 1-year longitudinal data. (Submitted).

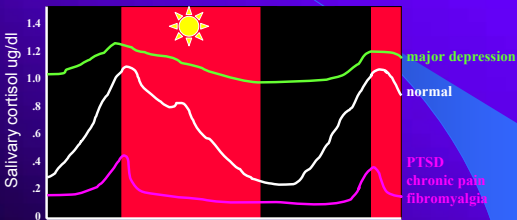
Biological Measures...



Cortisol - Why measure it?

- Adrenal stress hormone
- Secreted during psychological stress
- Regulated by brain mechanism (HPA) with negative feedback loop
- Can become dysregulated in disease states (depression, physical disease)
- May play a role in disease progression

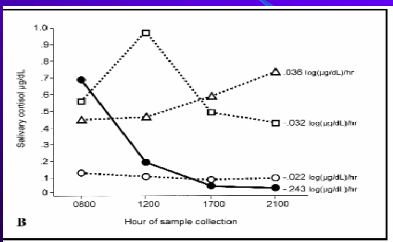
Diurnal cortisol rhythms: Normal vs. dysregulated



Yehuda, R., M. H. Teicher, et al. (1996). "Cortisol regulation in posttraumatic stress disorder and major depression: a chronobiological analysis." *Biol Psychiatry* 40(2): 79-88.

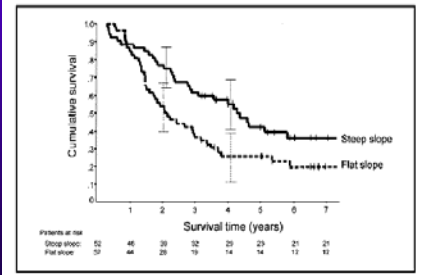
Slide courtesy of Dr. David Spiegel and Dr. Sandra Sephton

Abnormal Cortisol Secretion Metastatic Breast Cancer



From Sephton, Sapolsky, Kramer & Spiegel, 2000. *JNCI* 92(12), 994-1000.

Cortisol and survival
Metastatic Breast Cancer



From Sephton, Sapolsky, Kramer & Spiegel, 2000. JNCI. 92(12), 994-1000.

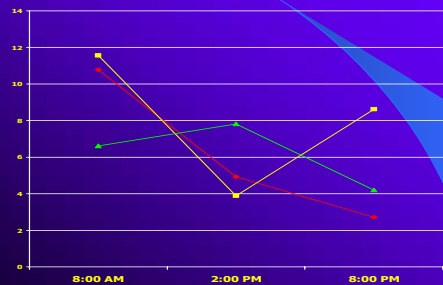
Study Design

- Pre-post MBSR trial (no control)
- Early stage breast and prostate patients completed treatment at least 3-months
- Assessed salivary cortisol three times daily both before and after participation
- Assessed immune function pre- and post through blood draws

Participants

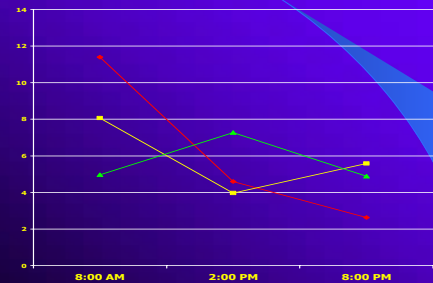
	Breast Patients	Prostate Patients	Total Patients	Average Age	Average Education	Time Since Diagnosis
Time 1	49	10	59	54.5	14.7	2 years
Time 2	33	9	42	55.2	14.6	
Time 3	36	7	43	54.4	14.8	
Time 4	27	8	35	56.6	14.9	

Cortisol Profiles Pre-MBSR



From Carlson et al. (2004). PNE, 29, 448-474.

Cortisol Profiles Post-MBSR

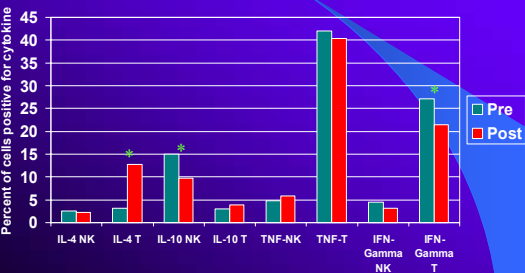


From Carlson et al. (2004). PNE, 29, 448-474.

Immune measures

- Counts of lymphocytes: NK, B, T total, T helper, T cytotoxic
- Intracellular cytokines from T and NK cells:
 - Technique to isolate T and NK cell, stimulate with antigen and see how much of different types of cytokines are released.
 - Cytokines measures were either pro-inflammatory or anti-inflammatory and thought to have some relevance in cancer

Immune Measures Pre- and Post



Immune Changes

- Increases:
 - IL-4 (T cells)
 - IL-4 has antitumor activity and is being used in clinical trials for breast cancer
- Decreases:
 - IL-10 (NK)
 - IFN-gamma (T)
 - Higher levels of both associated with increases in depression

Health/Risk behavior

- Health behavior:
 - Diet
 - Exercise
 - Sleep
- Risk Behavior
 - Smoking
 - Alcohol
 - Accidents
 - Sexual promiscuity

Diet

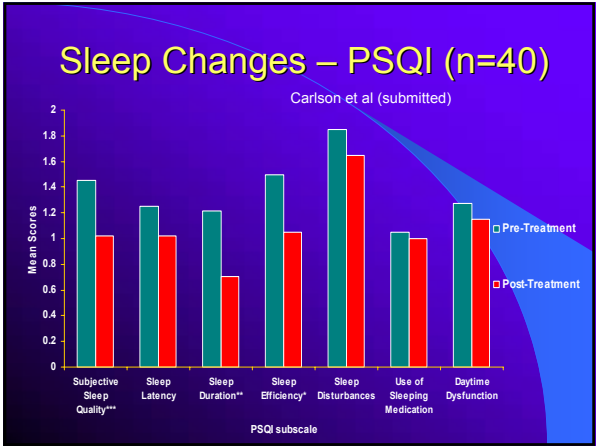
- Saxe, Carmody et al (UMass) 2001. *J.Urology*, 166, 2202-2207
- Study of combining dietary change with MBSR for stabilizing prostate specific antigen (PSA) levels in men with prostatectomy and biochemical recurrence
- rate of PSA increase decreased in 8 of 10 men
- 3 had a decrease in absolute PSA.
- median doubling time increased from 6.5 months to 17.7 months after the intervention

Sleep

- 45-75% of cancer patients suffer sleep disturbance
- Shapiro et al (2003). *JPR*, 54, 85-91
- RCT of MBSR vs control in breast cancer pts.
- Kept sleep diaries
- Both groups improved equally in sleep quality
- those who practiced more informal mindfulness reported feeling more rested.

Sleep

- Carlson et al, (2003). *Psychosomatic Medicine*
- Pre-post trial of MBSR in breast and prostate cancer patients
- Pre: 40.7% of the sample initially reported sleep of poor quality
- Post: 20% of the sample reported poor quality sleep,
- 80% reported adequate or good sleep quality



Future Research Directions

- More well-controlled studies with randomized comparison groups
 - avoid confounds (possible with no treatment controls):
 - Natural history of disease and healing
 - Regression towards the mean
 - Repeated measures reporting bias
 - Variability in outcome measures
 - Seasonal effects

Research Directions II

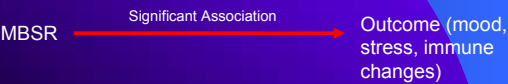
- More “dismantling” studies
 - Choose a control group to isolate specific aspects of the intervention:
 - Relaxation
 - Social Support
 - Professional Attention/ Contact
 - Expectancy (sham meditation?)
 - Yoga

Research Directions III

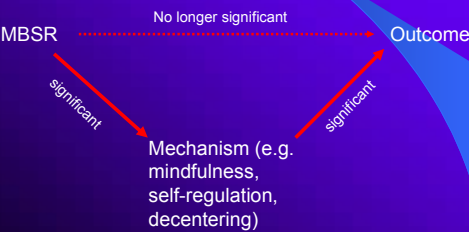
- More comparisons with validated treatment programs:
 - Tougher comparison and more ecologically valid
 - Supportive Expressive Therapy
 - Psychoeducation
 - Self-Management
 - Cognitive Behavioral Stress Management

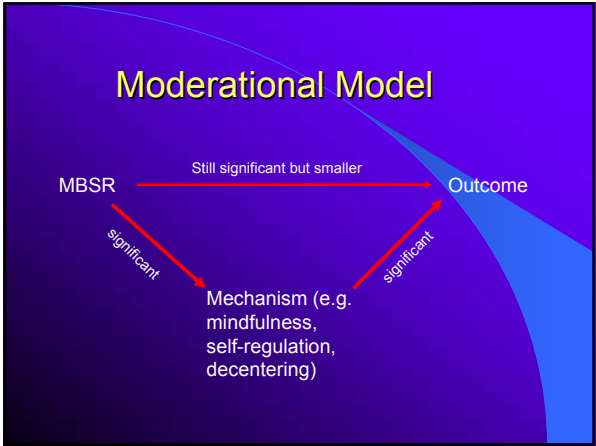
Research Directions IV

- Studies to test theoretical models of mediators/moderators of change



Mediational Model





Research Directions V

Tests of biological mechanisms

- Systemic/holistic view
- Tests of more than one regulatory system simultaneously in MBSR and controls
 - Endocrine (cortisol, melatonin)
 - Immune (NK, T cells, cytokine production)
 - SNS (catecholamines – NE and E)
 - Heart rate variability
 - Sleep/fatigue
 - Psychological factors

First steps

- Just received a grant (Canadian Breast Cancer Research Alliance) to study extent of systemic dysregulation and relationships to psychological disturbance in BC patients compared to controls (Drs. Campbell and Grossman Co-Is)
- Looking at cortisol, melatonin, NE, E, heart rate variability, sleep, stress and mood simultaneously over 24-hr period (ambulatory monitoring)

Next steps

- Test relationships in an RCT with MBSR vs. control condition
- Waiting on grant which proposes to compare MBSR to supportive-expressive therapy

*Until one is committed there is always hesitancy,
The chance to draw back, always ineffectiveness.
Concerning all acts of initiative and creation,
There is one elementary truth,
The ignorance of which kills countless ideas and splendid plans:
The moment one definitely commits oneself, then providence moves too.
All sorts of things occur to help that would never otherwise have occurred.
A whole stream of events issues from the decision,
Raising to one's favour all manner of unforeseen accidents and meetings
And material assistance which no one could have dreamed
Would come their way
Whatever you can do, or dream you can, begin it.
Boldness has genius, power and magic in it.*

- Goethe -
